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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,229	10/08/2003	Suguru Tabara	12844.0045US01	8128

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EXAMINER

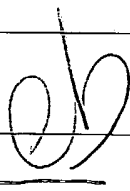
GOUDREAU, GEORGE A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/682,229	Applicant(s) TABARA, SUGURU	
	Examiner George A. Goudreau	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on (10-8-03' to 1-7-04').
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


GEORGE GOUDREAU
PRIMARY EXAMINER

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 6-7, 9, and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Shen et. al. (5,948,703).

Shen et. al. disclose a multi-step rie etching process for patterning a polysi gate on top of a SiO₂ gate oxide layer which is comprised of the following steps:

- The top portion of the polysi layer is anisotropically rie etched using a plasma which is comprised of Cl₂-He-O₂-N₂.; and
- The remaining portion of the polysi layer is anisotropically rie etched using a plasma, which is comprised of HBr-Cl₂-He-O₂.

This is discussed in columns 1-8. This is shown in figures 1-8.

3. Claims 1-3, 6-9, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Mckee (5,804,088).

Mckee disclose a multi-step rie etching process for patterning a polysi gate on top of a SiO₂ gate oxide layer which is comprised of the following steps:

- The top portion of the polysi layer is anisotropically rie etched using a plasma which is comprised of SF₆-HBr in an ECR type plasma etcher.; and
- The remaining portion of the polysi layer is anisotropically rie etched using a plasma, which is comprised of HBr-Cl₂-He-O₂ in an ECR type plasma etcher.

This is discussed in columns 1-8. This is shown in figures 1-9.

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4-5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et. al. as applied in paragraph 2 above.

Shen et. al. as applied in paragraph 2 above fail to disclose the following aspects of applicant's claimed invention:

- the specific etch process parameters which are claimed by the applicant; and
- the specific usage of a gate SiO₂ layer of the specific thickness, which is claimed by the applicant

It would have been obvious to one skilled in the art to employ a gate oxide layer of the specific thickness, which is claimed by the applicant based upon the following. It would have been desirable to provide a gate oxide of sufficient thickness to provide

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adequate electrical insulation between the gate, and the wafer without forming an excessively thick gate oxide layer which would undesirably waste both precious processing time, and materials.

It would have been prima facie obvious to employ any of a variety of different etch process parameters in the rie etching process taught above including those which are specifically claimed by the applicant. These are all well known variables in the plasma etching art, which are known to effect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process parameters which are claimed by the applicant in the rie etching process which is taught above based upon *In re Aller* as cited below.

"Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the quality of the plasma etching process.

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mckee as applied in paragraph 3 above.

Mckee as applied in paragraph 3 above fail to disclose the following aspects of applicant's claimed invention:

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- the specific etch process parameters, which are claimed by the applicant;
- the specific usage of a gate SiO₂ layer of the specific thickness which is claimed by the applicant; and
- the specific usage of an ECR type plasma etching apparatus to conduct the etching process

It would have been obvious to one skilled in the art to employ a gate oxide layer of the specific thickness, which is claimed by the applicant based upon the following. It would have been desirable to provide a gate oxide of sufficient thickness to provide adequate electrical insulation between the gate, and the wafer without forming an excessively thick gate oxide layer which would undesirably waste both precious processing time, and materials.

It would have been prima facie obvious to employ any of a variety of different etch process parameters in the rie etching process taught above including those which are specifically claimed by the applicant. These are all well known variables in the plasma etching art, which are known to effect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process parameters which are claimed by the applicant in the rie etching process which is taught above based upon In re Aller as cited below.

"Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the quality of the plasma etching process.

It would have been obvious to one skilled in the art to employ an ECR plasma etcher in the conduction of the plasma etching process taught above based upon the following. The usage of an ECR plasma etcher is conventional or at least well known in the plasma etching arts. (The examiner takes official notice in this regard.) Further, the specific usage of an ECR plasma etcher to conduct the etching process taught above simply represents the usage of an alternative, and at least equivalent means for conducting the plasma etching process taught above to the specific means which are taught above.


8. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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10. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
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